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TECHNICAL NOTE

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Connie M. Vicuna
Biologist

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WILDLIFE AND CONSERVATION TILLAGE

Research is in progress in many states and Canadian provinces in the Midwest and Great Plains to evaluate the effects of various conservation tillage systems on wildlife.

Several benefits have been identified. Stated generally, conservation tillage increases the food and cover available to wildlife during critical times of the year. Conservation tillage also increases the diversity of cover on the land and several researchers have noted an increased diversity of wildlife species as well.

Aquatic habitats have also benefited from the erosion control provided by conservation tillage. The amount of sediment entering waterways has been lowered, resulting in improved water quality. Reducing sediment input has improved or maintained habitat for fish and other aquatic species in many streams, lakes, and wetlands.

At the same time that benefits have been identified, concerns have been expressed relative to certain aspects of conservation tillage and potential impacts on wildlife. Expressed most frequently is a concern about the effects of chemicals on wildlife. Many of the insecticides are extremely toxic to wildlife that consume either the insecticide or insects that have been sprayed with the insecticide. Some herbicides, such as paraquat, have been shown to cause egg mortality or deformations of young birds.

The potential values of conservation tillage for wildlife depend on the availability and quality of cover types and habitats provided by land uses other than cropland. Maintaining a wide diversity of cover and providing all habitat needs is more important for wildlife maintenance than the specific conservation tillage system.

It is important to keep up-to-date on positive and negative impacts of conservation tillage on wildlife and their habitats. In that way, it is possible to obtain the most benefits with the least expense to wildlife.

The following materials outline the benefits of the various conservation tillage systems and some management suggestions to maximize the potential wildlife habitat values.

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I. No-till

A. Fall seeded small grains

1. Habitat benefits:

a. Increases the available acres of suitable nesting cover.

b. More acres of suitable nesting habitat reduce the ability of predators to search all nest cover which reduces losses to predation.

c. Provides winter food from waste grains not covered by crop residue or soil.

d. Provides winter cover for species such as sharptail grouse that can use shorter residues and survive under the snow that accumulates in the stubble.

2. Management to obtain and maintain habitat benefits:

a. Avoid spraying or applying pesticides, especially during the nesting season from mid-April through late June.

B. Spring seeded small grains

1. Habitat benefits:

a. Provides winter food and winter cover, especially if there is little or no weed control in fall and there are abundant weed seeds available.

b. Provides additional acres of nesting habitat. Spring seeded small grains are most valuable as renesting cover.

c. Total duck production was 3.8 times greater on no-till farms than on conventionally tilled farms in Canada (Cowan 1982).

2. Management to obtain and maintain habitat benefits:

a. Avoid spraying pesticides during the nesting season, from mid-April through late June.

C. Row crops

1. Habitat benefits:

a. Improved height diversity, crop residue, and interrow cover in no-till fields (especially corn) increased habitat complexity.

b. Improves winter food availability and winter cover.

c. More abundant and more diverse insect populations provide improved food availability and a greater number and variety of birds using no-till corn versus conventionally tilled corn.

d. Improved nesting cover - In Iowa studies, nest densities were seven times higher in no-till than in conventional till row crops.

e. Twelve species of nesting birds with an average nest density of 14.6 nests/100 ac. in no-till were observed in Iowa, as compared with three species of birds with an average nest density of 1.6 nests/100 ac. in conventional till.

2. Management to obtain and maintain habitat benefits:

a. Provide the tallest standing cover possible by not chopping or discing residues.

b. Gopher problems - place treated grain in burrows. Don't put baited grain in piles, as it could attract flocks of birds.

c. Even with improved habitat conditions, nesting density is probably insufficient on no-till row crops to maintain viable wildlife populations without immigration from surrounding non-cropland habitats.

II. Ridge-till

A. Habitat benefits:

1. Residue left in the fields and lack of tillage leaves waste grain for winter food.

2. Improves cover diversity and food during summer.

3. Cultivation reduces value of ridge-till as nesting cover although these fields will provide habitat for non-breeding birds.

B. Management to obtain and maintain habitat benefits:

1. Band chemicals in the ridges to reduce the exposure of wildlife to potentially harmful chemicals.

2. Rotating crops on ridges decreases the need for chemical insecticides and reduces the direct and indirect exposure of wildlife to these products.

III. Strip-till

The benefits and management concerns of strip-till are similar to those for no-till and ridge-till systems.

IV. Mulch-till (Minimum tillage)

A. Habitat benefits:

1. Any system that leaves residue and waste grain on the surface over winter provides winter food. Weeds that develop in the fall add to the diversity of available food.

2. Winter cover value depends on the height and density of standing residue. Tall, dense residue provides better winter cover than short, sparse residue.

3. Use of undercutters or herbicides on fallow land leaves cover in an upright position and increases the available nesting cover. Studies done in Kansas have found about 50 percent of pheasant nests undisturbed by using the widest blades available. Mulch treaders should not be used. Avoid chemical applications during the nesting season, from mid-April through late June.

B. Management to obtain and maintain habitat benefits:

1. Use of chisels and discs does not leave enough standing residue or waste grain to provide significant winter food or cover.

2. Avoid disturbing residues during the nesting season from mid-April to late June. The most critical period is from mid-May thru late June when the highest numbers of birds are completing incubation. Disturbance late in incubation reduces both the probability and success of renesting attempts.

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Dwayne J. Breyer
State Resource Conservationist